



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,814	11/19/2003	Phong T. Nguyen	N1161-00025	7199
8933	7590	01/25/2006	EXAMINER	
DUANE MORRIS, LLP IP DEPARTMENT 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103-4196			AKANBI, ISIKA O	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,814

Applicant(s)

NGUYEN ET AL.

Examiner

Isiaka O. Akanbi

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-16 and 19-25 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 17, 18 and 26-28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The examiner approves the drawings filed 19 November 2003.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 25-27 has been renumbered 25-28.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 9-16 and 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by over Meada (6,481,003 B1).

As regard to claim 1, Meada discloses a method of calibrating a positioning stage comprising placing a substrate on the positioning stage, the substrate having a contrast film above a portion thereof, with at least one pattern at a predetermined location above the substrate, corresponding to a predetermined location on the positioning stage if the positioning stage has zero offset from a registration position, applying a beam to a position where the pattern on the substrate would be located if the positioning stage has zero offset, measuring at least one of the group consisting of reflected, transmitted and scattered portions of the beam

(col. 5, line 30-38)(col. 6, line 54-61) and detecting whether the positioning stage has a non-zero offset based on the measured portion of the beam (col. 14, line 60-col. 15, line 1-10).

As to claims 2 and 13, according to claims 1 and 12, Meada discloses wherein the wherein the measured portion of the beam has a first frequency distribution if the positioning stage has a zero offset, and a second frequency distribution if the positioning stage has a non-zero offset (col. 14, line 60-col. 15, line 1-10).

As to claim 3, Meada discloses a method that further comprising moving the positioning stage if an offset is detected, repeating steps until no offset is detected and determining a magnitude and direction of the offset of the positioning stage based on a total distance and direction the positioning stage is moved (col. 11, line 41-55)(col. 17, line 5-21).

As to claims 4 and 14, Meada discloses wherein the beam is one of the group consisting of a Microwave, Infrared, Visible, UV, X-ray, or Electron beam (col. 30, line 38-46).

As to claims 5, 15 and 24, Meada discloses wherein the substrate is a semiconductor wafer, and the contrast film comprises at least one of the group consisting of photoresist, metal, oxide, and nitride (col. 1, line 32-41).

As to claims 6, 16 and 25, Meada discloses wherein the substrate is an etch modified substrate by superposing on a wafer spread with photosensitive material and serving as the exposure substrate (col. 1, line 32-35).

As to claims 9 and 19, Meada discloses wherein the substrate includes a second pattern disposed at a different angular position on the substrate from the first pattern (fig. 3), the method further comprising determining a translation vector separating the first and second patterns and detecting an angular offset of the positioning stage, based on the translation vector (fig. 5, SA 32 and SA 38)(col. 12, line 51-col. 13, line 1-65).

As to claim 10, Meada discloses wherein the substrate is a monitor wafer, the method further comprising before step (a), the steps of depositing the contrast film on a bare semiconductor wafer and etching the pattern in the contrast film, to form the monitor wafer (fig. 5, SA 10)(col. 1, line 32-36).

As to claims 11 and 20, Meada discloses wherein the pattern includes a plurality of rectangles arranged around a perimeter of the substrate (fig. 3 and fig. 4).

Regarding claim 12, Meada discloses a system for calibrating a positioning stage comprising a substrate adapted to be placed on the positioning stage, the substrate having a

contrast film above a portion thereof, with at least one pattern at a predetermined location above the substrate, corresponding to a predetermined location on the positioning stage if the positioning stage has zero offset from a registration position (col. 5, line 30-38)(col. 6, line 54-61), a beam source (1/16) that applies a beam to a position where the pattern on the substrate would be located if the positioning stage has zero offset, a sensor (12) for measuring at least one of the group consisting of reflected, transmitted and scattered portions of the beam and means for detecting whether the positioning stage has a non-zero offset based on the measured portion of the beam (fig. 1)(col. 6, line 10-61)(col. 14, line 47-col. 15, line 1-9).

As regard to claim 21, Meada discloses a monitor wafer comprising a semiconductor substrate and a contrast film above the substrate, the contrast film including a plurality of positive or negative patterns of geometrical objects distributed at a plurality of respectively different angles with respect to a reference location on the substrate (col. 1, line 32-42).

As regard to claim 22, Meada discloses wherein the plurality of geometrical objects includes four rectangles spaced 90 degrees apart (fig. 3).

As regard to claim 23, Meada discloses wherein the plurality of rectangles are located proximate to a circumference of the monitor wafer (fig. 3).

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art method of calibrating a positioning stage that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Allowable Subject Matter

Claims 7, 8, 17, 18, 26, 27 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 7 and 17, the prior art of record, taken alone or in combination, fails to disclose or render obvious a second film on at least a portion of the first film. Claim 8 and 18 allowable by virtue of their dependency on claims 7 and 17.

As to claims 26, the prior art of record, taken alone or in combination, fails to disclose or render obvious the plurality of geometrical objects includes a plurality of first rectangular contrast film portions, and the monitor wafer further includes a plurality of second rectangular contrast film portions on one or more of the first rectangular contrast film portions. Claims 27 and 28 are allowable by virtue of their dependency on claim 26.

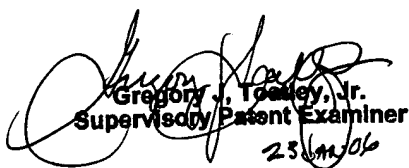
Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
January 17, 2006


Gregory J. Toatley, Jr.
Supervisory Patent Examiner
25 Jan 06